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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/590,706

05/17/2007

Susumu Tsukamoto

2006-1404A

3816

513 7590 12/23/2009

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EXAMINER

PAIK, SANG YEOP

ART UNIT

PAPER NUMBER

3742

MAIL DATE

DELIVERY MODE

12/23/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,706	Applicant(s) TSUKAMOTO ET AL.	
	Examiner SANG Y. PAIK	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukamoto et al (US 2004/0026381) in view of Terada et al (US 5,155,329) or Chou et al (US 5,961,859), and Kearney (US 4,446,354).

Tsukamoto shows the laser welding method claimed including a laser that provides a varied waveform and frequency in response to the welded portion, including the frequency of the welded portion. But, Tsukamoto does not show the method of detecting a time change in light emission strength of plasma or plume generated from the welded portion.

Terada shows that it is known in the art that the welded conditions are monitored and determined by the light intensity emitted from the welds and that the time change of the light intensity correlates with the varying waveforms of the laser as illustrated in Figures 4 and 6. Chou also shows that it is well known in the art that the welded conditions are monitored and determined by the intensity of the light emission of the welded portion, and Chou also shows that strength of plasma can reach a threshold

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value that would be indicative of the weld problem, if last more than 30 ms, which is longer than 2 ms.

Kearney shows that it is well known that the amplitude and wavelength of radiation emitted by the welding arc or plasma is detected by a sensor to determine the welded portion conditions.

In view of Terada or Chou, it would have been obvious to one of ordinary skill in the art to Tsukamoto with the setting of the laser outputs based on the detected change in the light emission strength of the welded portion since such light intensity is alternatively known to provide the quality conditions of the welded portions. With respect setting an arbitrary threshold value to the change in the light emission strength of the plasma, Chou shows the plasma strength that can reach a threshold value that would be indicative of the weld problem, and it would have been obvious to adapt Tsukamoto to further set the laser to continue to weld without disruptions, for a longer period of time, to more effectively provide and complete the welding process and to minimize breaks in the light emission strength that would exceed the light emission threshold value.

In view of Kearney, it would have been obvious to one of ordinary skill in the art to Tsukamoto, as modified by Terada or Chou, with obtaining the amplitude of the plasma of the welded portion to further correlate the laser output to that of plasma amplitude of the weld portion to obtain quality welds without defects as desired.

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3. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukamoto et al (US 2004/0026381) in view of Terada et al (US 5,155,329) or Chou et al (US 5,961,859).

Tsukamoto shows the laser welding method claimed including a laser that provides a varied waveform and frequency in response to the welded portion, including the frequency of the welded portion. But, Tsukamoto does not show the method of detecting a time change in light emission strength of plasma or plume generated from the welded portion.

Terada shows that it is known in the art that the welded conditions are monitored and determined by the light intensity emitted from the welds and that the time change of the light intensity correlates with the varying waveforms of the laser as illustrated in Figures 4 and 6. Chou also shows that it is well known in the art that the welded conditions are monitored and determined by the intensity of the light emission of the welded portion, and Chou also shows that strength of plasma can reach a threshold value that would be indicative of the weld problem, if last more than 30 ms, which is longer than 2 ms.

In view of Terada or Chou, it would have been obvious to one of ordinary skill in the art to Tsukamoto with the setting of the laser outputs based on the detected change in the light emission strength of the welded portion since such light intensity is alternatively known to provide the quality conditions of the welded portions. With respect setting an arbitrary threshold value to the change in the light emission strength of the plasma, Chou shows the plasma strength that can reach a threshold value that would

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be indicative of the weld problem, and it would have been obvious to adapt Tsukamoto to further set the laser to continue to weld without disruptions, for a longer period of time, to more effectively provide and complete the welding process and to minimize breaks in the light emission strength that would exceed the light emission threshold value.

Response to Arguments

4. Applicant's arguments filed 9/22/09 have been fully considered but they are not persuasive.

With respect to Terada, the applicant argues Terada only shows monitoring of the intensity of the light but not for suggesting the optimum laser output conditions to prevent the occurrence of the weld defects. It is noted, however, that setting of the "optimum" output laser variations is shown in Tsukamoto wherein it would have been obvious to adapt Tsukamoto with the teachings of Terada to set the desired laser outputs in response to the monitored light intensity which is shown to be indicative of the welding conditions.

With respect to Chou, the applicant argues Chou considers the time duration of 30 ms to be an important factor whereas the claims recites for evaluating the occurrence of defects during 2 ms or more. It is noted that 30 ms meets the recited time duration of 2 ms or more, and thus the applicant's argument is not deemed persuasive. The applicant also argues Chou considers the welding quality relating to depth but not the weld defects such as porosity, blowholes, and crack. It is noted that, while the

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claims do not explicitly recite for such defects, Tsukamoto is also concerned about reducing defects such as porosities, blowholes, and cracks.

With respect to Kearney, it is noted that Kearney is applied for teaching of the analyzing the frequency characteristics relating to the amplitude of a frequency component as recited in claim 2, line 7.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SANG Y. PAIK whose telephone number is (571) 272-4783. The examiner can normally be reached on M-F (9:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on (571) 272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SANG Y PAIK/

Primary Examiner, Art Unit 3742